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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,704	06/27/2003	John Thomas Pawlak	2003P07963 US	9676

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Siemens Corporation
Intellectual Property Department
170 Wood Avenue South
Iselin, NJ 08830

EXAMINER	
BAKER, DAVID S	
ART UNIT	**PAPER NUMBER**
2884	

DATE MAILED: 10/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/608,704	PAWLAK ET AL.	
	Examiner	Art Unit	
	David S. Baker	2884	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06/27/2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06/27/2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Drawings

2. Figures 7A-7C should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claim 9 is objected to under 37 CFR 1.75(c). Claim 9 is a dependant claim that does not refer back to directly or in the alternative to one or more preceding independent or dependent claim/s. Appropriate correction is required. See MPEP § 608.01(n).

4. Claim 15 is objected to because of the following informalities: In claim 13, the apparatus is an orbital detector that includes dual detector elements as well as dual sensor elements, dual carrier mechanisms, and a control unit. The terminology "said apparatus" in claim 15, which is dependent upon claim 13, appears to refer to the dual detector elements only. Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Stephan (US Patent #5,677,535).

Regarding claim 11, Stephan discloses (figure 2, column 3 lines 15-49) a method for orbital detection comprising moving relative to a patient a first detector in a first direction between a position distal to a patient and a position adjacent to a patient based on an output of a sensor that senses patient proximity to the first detector, moving relative to a patient a second detector in a second direction between a position distal to a patient and a position adjacent to a patient based on an output of a sensor that senses patient proximity to the second detector, and determining an orbital path of the first and second detectors around the patient based upon the positions adjacent to the patient determined by the first and second sensing methods.

Regarding claim 12, which is dependant upon the method of claim 11, Stephan discloses (column 1 lines 57-64) that the method of claim 11 may be performed automatically.

7. Claims 27 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Kovacs (US Patent #4,503,331 A).

Regarding claims 27 and 30, Kovacs discloses (figures 1 and 3 and 4, column 2 lines 36-68, column 3 lines 1-68, column 4 lines 1-2) a method for nuclear medicine detection with one nuclear medicine detector that follows a non-circular orbit comprising automatically determining a plurality of locations around a perimeter of a patient without a detector pre-scan, automatically determining a non-circular orbit around a patient based, at least in part, upon said plurality of locations, moving the nuclear detector along said non-circular orbit around said patient for acquisition of nuclear medicine data, and establishing at least one location based on at least one location against which the patient is supported. Kovacs' detector includes a sensor that can automatically determine an orbit based on a predefined minimum patient-detector distance; the devices automatically and continuously determines its location point such that when finished with its orbit, the path was determined based upon the plurality of points.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

> the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 1, 4-8, 13-16, 18-21, and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kovacs (US Patent #4,503,331 A) in view of Ohike (US Patent #5,691,538 A).

Regarding claims 1 and 4-8, Kovacs discloses (figures 3 and 4, column 2 lines 55-68, column 3 lines 1-68, column 4 lines 1-2) a non-circular orbit detection method comprising locating a detector displaced a distance from a patient, moving the detector in a direction towards said patient, and moving the

detector in a non-circular-orbit around said patient. Kovacs does not disclose expressly locating a first and second detector displaced with respect to one another that both follow the method outlined above. Ohike discloses (figures 1, 2, 4, and 5, column 1 lines 8-20, column 2 lines 58-67, column 3 lines 1-54, column 7 lines 25-33, column 8 lines 9-39, column 9 lines 17-60, column 10 lines 1-2) a dual detector system that locates first and second detectors, displaced with respect to one another a distance from a patient, moving the first and second detector towards said patient until a first sensor senses a first point of said patient at a first sensing position, moving the first and second detector towards said patient until a second sensor senses a second point of said patient at a second sensing position, moving the first and second detectors in an orbit around said patient, that the detectors are nuclear medicine detectors, locating the first and second detectors at an angle with respect to one another, such as at an angle of about 90 degrees from one another, wherein said first direction is generally downward, or vertical. At the time the invention was made it would have been obvious to a person of ordinary skill in the art to modify the non-circular orbit method given by Kovacs to include two detector heads and a patient proximity sensing feature as well as the methods of use for the dual detector system explained by Ohike. The suggestion/motivation for doing so would have been the ability to automate the orbit determination steps of nuclear tomography by utilizing the sensors to map the patient's location and then determine the orbit. Additionally, a dual detector system operating in a non-circular orbit fashion would be logical as it is well known in the art that higher resolution images are possible using dual detectors.

Regarding claims 13-16 and 18-21, Kovacs discloses (figures 1-4, column 1 lines 5-10, column 2 lines 55-68, column 3 lines 1-68, column 4 lines 1-20) an orbital-detector apparatus, comprising a first detector element (50) to detect inside a patient, a first sensor element (not shown) to sense patient proximity to said first detector element (50), a first carrier mechanism (10, 20) configured to move said first detector element (50) in a first direction from a position distal to the patient to a position adjacent to said patient based on an output of said first sensor element (not shown), a control unit configured to determine an orbital path of said first detector element (50) around the patient based upon said position adjacent to said patient, that the orbital path is a non-circular orbit, and that the apparatus varies a radius of said orbital path to reduce a distance of the detector element (50) from the patient. Kovacs does not disclose expressly a second detector element to detect inside a patient, a second sensor element to sense patient proximity to said second detector element, a second carrier mechanism configured to move said second detector element in a second direction from a position distal to the patient to a position adjacent to said patient based on an output of said second sensor element. Ohike discloses (figures 1 and 2, column 1 lines 8-20, column 2 lines 58-67, column 3 lines 1-54, column 7 lines 25-33, column 8 line 9-39, column 9 lines 17-60, column 10 lines 1-2) a dual detector system (3a, 3b) in which there is a second detector element (3b) to detect inside the patient (2), a second sensor element (not shown) to sense patient (2) proximity to said second detector element, a second carrier mechanism (8, 9b) configured to move second detector element (3b) in a second direction from a position distal to the patient (2)

to a position proximate to said patient (2) based on an output of said second sensor element, that the detectors (3a, 3b) are nuclear medicine detectors, wherein the front surfaces (not shown) of the first detector element (3a) and the second detector element (3b) are at an angle of less than about 180 degrees from one another, such as at an angle of about 90 degrees from one another, wherein said first direction is generally downward, or vertical. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to add a second detector with a sensor to the orbital-detector apparatus put forth by Kovacs and then utilize the method of Ohike for its use. The suggestion/motivation for doing so would be the ability to decrease detection times while producing higher resolution quality images.

Regarding claims 28 and 29, which is dependant upon the method of claim 27, Kovacs discloses all the limitations of claim 27 (See Office Action Section #6) including (figure 5, column 5 lines 3-68, column 5 lines 1-18) the automatically determining method from claim 28 includes calculating a non-circular orbit using a controller. Kovacs does not disclose expressly the automatically determining method from claim 27 including determining the locations by sensing a proximity to a patient of at least two detectors which are arranged in a V-configuration during data acquisition. Ohike discloses (figures 4 and 5, column 7 lines 25-32, column 9 lines 17-50) the automatically determining includes determining the locations by sensing a proximity to a patient of at least two detectors which are arranged in a V-configuration during data acquisition. At the time the invention was made, it would have been obvious to a person of

ordinary skill in the art to use points at which the patient is located via the sensors to determine the orbital to use in conjunction with the scanning method outlined in claim 27. The suggestion/motivation for doing so would have been to accomplish a non-circular orbital that does not contact the patient while providing maximum resolution.

12. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kovacs (US Patent #4,503,331 A) and Ohike (US Patent #5,691,538 A) as applied to claim 1 above, and further in view of Lonn (US Patent #5,777,332 A).

Regarding claim 2, which is dependent upon the method on claim 1, Kovacs and Ohike do not disclose expressly further including determining the non-circular-orbit based on locations of the sensed points. Lonn discloses (figures 1 and 2, column 6 lines 60-67, column 7 lines 1-16) further including determining the non-circular-orbit based on locations of the sensed points. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the methods of Kovacs and Ohike from claim 1 with the method of Lonn to determine a non-circular orbit. The suggestion/motivation for doing so would have been to utilize the sensors to determine the minimum distances for the determination of a non-circular orbit to rotate the detectors about the patient.

Regarding claim 3, which is dependent upon the method of claim 1, Kovacs and Ohike do not disclose expressly further including determining the non-circular-orbit based on locations of the sensed points and the geometry and location of the surface the patient contacts. Lonn discloses (figures 1 and 2,

column 6 lines 60-67, column 7 lines 1-16) further including determining the non-circular-orbit based on locations of the sensed points and the geometry and location of the surface the patient contacts. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the methods of Kovacs and Ohike from claim 1 with the method of Lonn to determine a non-circular orbit. The suggestion/motivation for doing so would have been to utilize the sensors to determine the minimum distances for the determination of a non-circular orbit to rotate the detectors about the patient.

13. Claims 9 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kovacs (US Patent #4,503,331 A) and Ohike (US Patent #5,691,538 A) as applied to claims 8 and 21 above, and further in view of Hug (US Patent #5,444,252 A).

Regarding claim 9, in so far as it is understood that claim 9 is intended to depend upon the method of claim 8, Kovacs and Ohike do not disclose expressly wherein the second direction is generally parallel to a front of the first detector. Hug discloses (figures 2a and 10a, column 4 lines 32-36) wherein the second direction is generally parallel to a front of the first detector. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to position the plates in such a 90 degree position with the method outlined in the parent claims. The suggestion/motivation for doing so would have been to improve the image quality and decrease detection time.

Regarding claim 22, which is dependant upon the apparatus of claim 21, Kovacs and Ohike do not disclose expressly wherein the second direction is generally parallel to a front of the first detector element. Hug discloses (figures

2a and 10a, column 4 lines 32-36) wherein the second direction (2) is generally parallel to a front of the first detector element (4). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to position the plates in such a 90 degree position with the apparatus outlined in the parent claims. The suggestion/motivation for doing so would have been to improve the image quality.

14. Claims 10 and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kovacs (US Patent #4,503,331 A) and Ohike (US Patent #5,691,538 A) as applied to claims 1 and 13 above, and further in view of Stephen (US Patent #5,677,535 A).

Regarding claim 10, which is dependant upon the method of claim 1, Kovacs and Ohike do not disclose expressly first and second sensors emitting light beams that are broken by proximity to a patient. Stephan discloses (figure 2, column 3 lines 15-49) first and second sensors emitting light beams that are broken by proximity to a patient. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use a parallel light beam sensor to measure patient to detector distances. The suggestion/motivation for doing so would have been the fact that this system would provide a contactless and automatic means for allowing the detector to be as close as possible to the patient during scanning.

Regarding claim 23, which is dependant upon the apparatus of claim 13, Kovacs and Ohike do not disclose expressly a first sensor emitting a light beam that is broken by proximity to a patient. Stephan discloses (figure 2, column 3 lines 15-49) a first sensor (7) emitting a light beam (13, 14, 15) that is broken by

proximity to a patient (10). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use a parallel light beam sensor to measure patient to detector distances. The suggestion/motivation for doing so would have been the fact that this system would provide a contactless and automatic means for allowing the detector to be as close as possible to the patient during scanning.

Regarding claim 24, which is dependant upon the apparatus of claim 13, Kovacs and Ohike do not disclose expressly a second sensor emitting a light beam that is broken by proximity to a patient. Stephan discloses (figure 2, column 3 lines 15-49) a second sensor (8) emitting a light beam (13, 14, 15) that is broken by proximity to a patient (10). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use a parallel light beam sensor to measure patient to detector distances. The suggestion/motivation for doing so would have been the fact that this system would provide a contactless and automatic means for allowing the detector to be as close as possible to the patient during scanning.

15. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kovacs (US Patent #4,503,331 A) and Ohike (US Patent #5,691,538 A) as applied to claim 13 above, and further in view of Maor (US Patent #5,811,813 A).

Regarding claim 17, which is dependant upon the apparatus of claim 13, Kovacs and Ohike do not disclose expressly a dual detector gamma camera system that utilizes parallel-hole collimated detectors. Maor discloses (column 5 lines 29-43) a dual detector gamma camera system (12, 13) that utilizes parallel-

hole collimated detectors (14, 16). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to select parallel hole collimators as the detection system for the nuclear medicine detectors outlined by Kovacs and Ohike. The suggestion/motivation for doing so would have been the accuracy of imaging associated with the parallel-hole collimator. Other collimator types would record incident radiation from unwanted angles resulting with inaccurate images.

16. Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maor (US Patent #5,811,813 A) in view of Stephan (US Patent #5,677,535 A).

Regarding claims 25 and 26, Maor discloses (figures 1 and 5, column 3 lines 22-67) first and second detector elements (12, 13) arranged in a generally V-configuration with a first detector element (12) extending along one leg of the V-configuration and a second detector element (13) extending along another leg of the V-configuration, means for moving the first and second detector elements (12, 13) relative to a patient (22) such that an open end of the V-configuration moves towards the patient (22), and means for moving the first and second detector elements (12, 13) relative to the patient (22) in a direction parallel to one leg of the V-configuration. Maor does not disclose expressly a sensor that senses when the first detector element is adjacent to a first point of the patient, a sensor that senses when the second detector element is adjacent to a second point of the patient, or the use of these means for following a non-circular orbit. Stephan discloses (figure 2, column 3 lines 15-49) a first contactless parallel light beam sensor (13-19) that senses when the first detector element (7) is adjacent to a first

point of the patient (10) and a second sensor (13-19) that senses when the second detector element (8) is adjacent to a second point of the patient (10), and means for moving the first and second detectors (7, 8) in a non-circular orbit about the patient (10) based on the first and second sensing points. The sensor remains constantly at less that about three centimeters from the patient resulting in a non-circular orbit. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use contactless distance sensors that create a non-circular orbit with the V-configuration detector such that the patient distance can be continuously and automatically determined throughout the course of scanning. The suggestion/motivation for doing so would have been to allow for a higher resolution and more accurate scan that could be conducting using the collimators.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Baker whose telephone number is 571-272-6003. The examiner can normally be reached on MTWRF 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David S Baker
Examiner
Art Unit 2884

DSB

DAVID PORTA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800